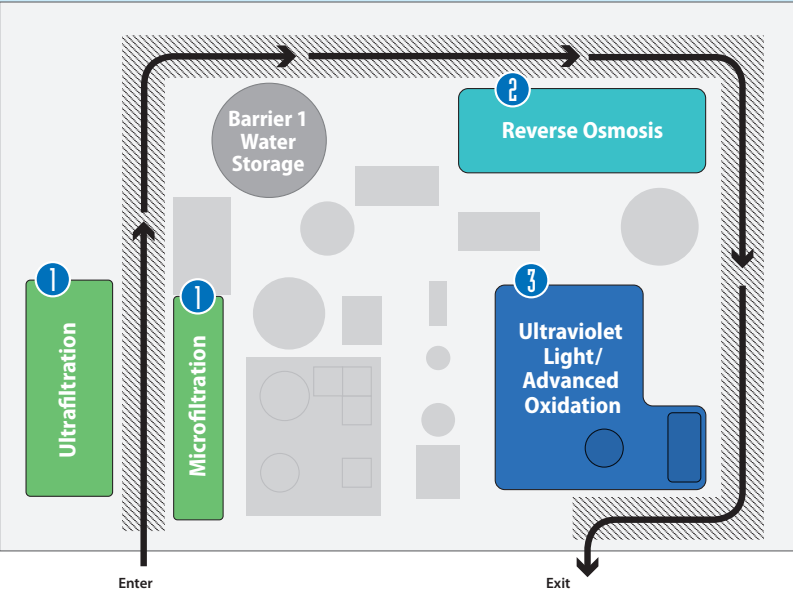


# Innovation for Future Water Supply

The Advanced Water Purification Facility (AWP Facility) is the focal point of the City of San Diego’s Water Purification Demonstration Project (Demonstration Project) that is exploring the use of water purification technology for future water supply. This state-of-the-art facility, located at the North City Water Reclamation Plant, is using the most advanced technologies to purify 1 million gallons of recycled water per day. The process includes three treatment barriers that are being tested and monitored at the AWP Facility: membrane filtration, reverse osmosis, and advanced oxidation with ultraviolet disinfection and hydrogen peroxide.



## The Purification Process

The City of San Diego currently uses recycled water for irrigation and industrial use. The Demonstration Project is a pilot study to determine the feasibility of further purifying recycled water to supplement local drinking water supplies through reservoir augmentation. The project will determine if the purified water meets water quality, safety and regulatory requirements. The purification process uses the multi-barrier approach of consecutive treatment steps, which work together to remove or destroy unwanted materials. Each barrier includes frequent and continuous water quality monitoring. Safeguards are built into the process to ensure that an

error at any given treatment step would not compromise public health. Here is a look at the process:

### Membrane-filtration — Barrier 1

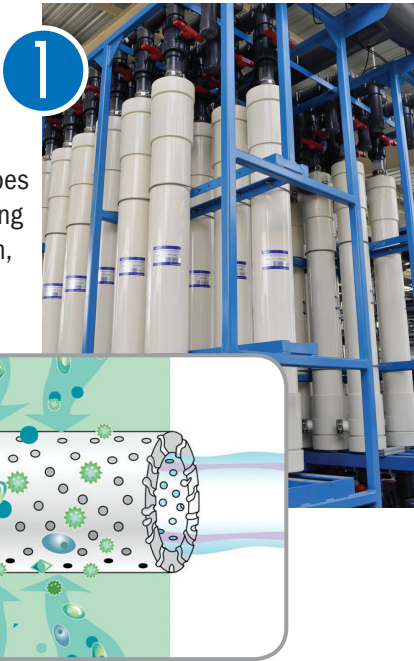
The first step in the water purification process is membrane filtration. Two types of membrane filtration systems are being tested, microfiltration and ultrafiltration, to determine which is most effective. This treatment step uses a series of membrane filtration canisters that remove or destroy contaminants in the already-treated recycled water.

Inside the membrane filtration canisters are hollow fibers that block unwanted materials like suspended solids, bacteria and protozoa from passing through. The filters are extremely efficient and are tested daily to confirm their consistent removal of contaminants. After undergoing membrane filtration, the clouded appearance of the recycled water is converted into a clear solution that contains dissolved organic material and salts.

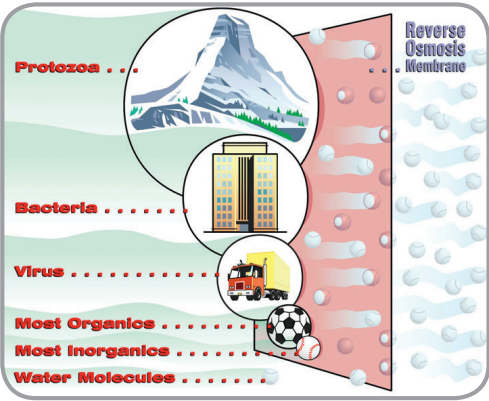


### Reverse Osmosis — Barrier 2

Reverse Osmosis (RO) is the second and most essential step in the purification process. Water is forced under high pressure through membranes with pores so small they cannot be seen even with the most advanced microscopes.



RO removes salt and other materials, many of which are more than 50,000 times smaller than the smallest bacteria and viruses, purifying the water to a level similar to distilled water quality. This is the same process used by some bottled water companies.



### Ultraviolet Disinfection/Advanced Oxidation — Barrier 3

Step three of the purification process is advanced oxidation through the use of ultraviolet (UV) light and hydrogen peroxide. Inside the vessel shown to the right is a high intensity light, similar to extremely concentrated sunlight, that provides disinfection. Hydrogen peroxide is added and reacts with the light to form powerfully reactive molecules like those used by nature to clear pollutants from the atmosphere. These molecules provide further disinfection and break down any remaining chemicals or pollutants, then break down themselves into water and oxygen.



San Diego is among many innovative cities exploring water purification technology to purify wastewater for use as drinking water.

# Demonstration Project Components

The Advanced Water Purification Facility is one component of the Demonstration Project. Additional components include a study of San Vicente Reservoir to determine the potential of augmenting the reservoir with purified water, an economic and energy analysis, and an independent advisory panel of experts to provide oversight and guidance. The purified water will not be added to the San Vicente Reservoir during the demonstration phase; it will be added to the existing recycled water distribution system. For more information about the project or to schedule a Speakers Bureau presentation for your organization, visit [www.purewatersd.org](http://www.purewatersd.org).

## Take a Look

Public tours of the Advanced Water Purification Facility are now available. You are invited to take a firsthand look at water purification technology and compare samples of the water from various steps throughout the process – the difference is clear.



Tours are held on Tuesdays and Thursdays, and on occasional evenings and Saturdays. To tour the facility, please register at [www.purewatersd.org/tours.shtml](http://www.purewatersd.org/tours.shtml) or call (619) 533-4631.

## Tasting is Believing

Orange County’s Groundwater Replenishment System is a full-scale advanced water purification facility located in Fountain Valley, California. The GWR System uses the same purification process being examined by the Demonstration Project to supply a safe and reliable water source to over 500,000 residents. As a full-scale facility, guests at the GWR System are able to taste the advanced purified water. To register for a tour, contact Becky Mudd at 714-378-3362 or [bmudd@ocwd.com](mailto:bmudd@ocwd.com).



To tour the facility, please register at [www.purewatersd.org/tours.shtml](http://www.purewatersd.org/tours.shtml) or call (619) 533-4631.



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# A look at the technology behind the Water Purification | Demonstration Project



*Exploring local resources to ensure  
a sustainable water supply*



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